REMARKS/ARGUMENTS

Claims 14, 28 and 39 are amended to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1, 8-14, 17, 18 and 20-42 remain in this application.

Rejection of Claims- 35 U.S.C. SECTION 103 (a)

The examiner has stated that Claims 1, 8-14, 17, 18 and 20-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pierrat (5,780,187).

Applicant respectfully requests reconsideration because Claims 1, 8-14, 17-18 and 20-42 are nonobvious over Pierrat. The claimed invention provides a method to effectively reduce line edge roughness. The filling method for filling the trenches of the claimed invention fills the trenches by dipping, spraying or spin coating as shown in Claims 1, 21 and 32.

Pierrat deposits a fill material, i.e. the second material, having substantially the same reflectivity and phase response to a first material, i.e. a reflective photomask, to repair the missing material of the first material by a deposition system to implement a laser assisted local deposition, an ion beam assisted local deposition or a local deposition using a patterning or lift-off process. Dip, spray or spin coating is the more convenient filling method than the laser assisted local deposition, the ion beam assisted local deposition, patterning and the lift-off process. The method of the claimed invention

is more convenient than the depositing method disclosed by Pierrat for repairing the photomask.

The Examiner states that dip coating, spray coating and spin coating are the three most common material application methods for depositing a fluid material. However, Pierrat does not disclose to deposit the fill material by the three MOST COMMON material application methods. Why does Pierrat disclose the more complex deposition systems implementing a laser-assisted local deposition process, an ion beam assisted local deposition process, or a local deposition using a patterning or lift-off process, but not implementing the simpler and the MOST COMMON material application methods, i.e. dipping, spraying and spinning?

Applicant considers that the process disclosed by Pierrat for depositing the fill material on all defects is more complex than the claimed method. The method of the present invention deposits, i.e. dips, sprays and spins, the additional material on all trenches and the entire patterned photoresist at the same time. Partial additional material is adhered to trenches of the patterned photoresist automatically by chemical reaction or physical absorption, and partial additional material being not adhered to trenches removes automatically. The claimed method makes the additional material to adhere to and fasten on all trenches at the same time. However, the process disclosed by Pierrat adheres the fill material on the defects of the first material at the same time but fastens the fill material on the defects one by one. The depositing systems disclosed by Pierrat deposit fill material on the layer 26, i.e. the first material with defects, at first, and then uses a laser,

an ion or a deposition using a patterning or lift-off process to fasten the fill material on each defect locally and one by one.

Because the process disclosed by Pierrat fastens the fill material on the defects one by one, the time for searching for the defects is longer than the time for fastening the additional material to all trenches by the claimed method. Furthermore, if the process disclosed by Pierrat misses some defects on the first material to fasten the fill material on the missed defects, the reflective photomask is still a defective reflective photomask. Thus the efficiency for repairing the defects by the process disclosed by Pierrat is worse than the efficiency for filling the trenches by the claimed invention.

The additional material for filling the trenches disclosed by applicant may be a fluid material, thermosetting polymer, thermoplasticity polymer, etc. as shown in Claims 8-13, 22-27 and 33-38. The fill material disclosed by Pierrat for repairing the first material has substantially the same reflectivity and phase response to a reflective photomask or is the same material with the first material. The selectivity and the classifications of the additional material of the claimed invention are more convenient and more unlimited than that of the fill material disclosed by Pierrat.

Furthermore, Pierrat does not disclose all limitations of the claimed invention. Pierrat has to focus ion beam milling and polish to trim excess fill material fastened on each defect one by one. Applicant could remove the unnecessary additional material once by thermal treatment or spin as shown in Claims 18, 20, 30-31 and 41-42. Applicant believes that one of ordinary skill in the art should have the ability to know which removing method is more convenient and faster.

The repairing process disclosed by Pierrat deposits the fill material by a material deposition system to repair defects on the layer 26. However, a new repairing process depositing the fill material by another material deposition system to repair defects on the layer or the photoresist may still be nonobvious, if the new repairing process is more convenient, more effective, more selective and less limited than the repairing process disclosed by Pierrat. Because the claimed method is more convenient, more effective, more selective and less limited than the repairing process disclosed by Pierrat, the claimed method is nonobvious and patentable over Pierrat.

Pierrat does not disclose the deposition systems implementing the simpler and the MOST COMMON material application methods, i.e. dipping, spraying and spinning, because the claimed method is nonobvious.

Conclusion

In light of the above amendments and remarks, Applicant submits that Claims 1, 8-14, 17, 18 and 20-42 as currently presented are in condition for allowance as acknowledged by the examiner. Applicant respectfully requests reconsideration and that a timely Notice of Allowance be issued in this case.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account

07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,

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